

REMARKS

Claims 1-13 have been examined. By this Amendment, Applicants cancel claims 12 and 13 without prejudice or disclaimer. New claims 14 and 15 have been added. Therefore, claims 1-11 and 14-15 are all the claims pending in the application.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 2-5 would be allowed if rewritten in independent form. However, Applicants respectfully request the Examiner to hold in abeyance such rewriting of claims 2-5 until the Examiner has had an opportunity to reconsider (and withdraw) the rejection of the other claims.

Claim Rejections - 35 U.S.C. § 101

Claims 9 and 10 are rejected under 35 U.S.C. § 101 as allegedly not being directed to statutory subject matter. Applicants respectfully submit that claims 9 and 10 comply with the requirements of 35 U.S.C. § 101.

Claim Rejections - 35 U.S.C. § 103

Claims 1, 6-8, and 11

Claims 1, 6-8, and 11 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,535,617 to Hannigan *et al.* ("Hannigan") in view of U.S. Patent No. 6,061,793 to Tewfik *et al.* ("Tewfik"). For *at least* the following reasons, Applicants respectfully traverse the rejection.

Applicants submit that claim 1 is patentable over the cited references. For example, claim 1 relates to a moving image watermarking method using a human visual system. The method comprises, *inter alia*, obtaining a global masking value through separately performed

masking operations, and obtaining a watermarked frame value by adding the watermark value weighted by the global masking value and a control variable, to an original frame value.

The Examiner acknowledges that Hannigan does not disclose obtaining a global masking value through separately performed masking operations. The Examiner relies on Tewfik to disclose this feature. Specifically, the Examiner alleges that col. 3, lines 56-67, col. 4, line 53, and col. 5, lines 546-67 disclose this feature. The Examiner further alleges that Hannigan, in col. 17, lines 26-38, discloses obtaining a watermarked frame value by adding the watermark value weighted by the global masking value and a control variable, to an original frame value as recited in claim 1. Applicants respectfully submit that the combined teachings of Hannigan and Tewfik do not disclose all the above-noted features of claim 1.

For instance, Applicants submit that Tewfik does not disclose or suggest that a global masking value is obtained through separately performed masking operations. Tewfik discloses a method to calculate a signal to mask ratio for each subband of an input audio stream in col. 4, lines 34-57. In this portion, Tewfik merely discloses that a determination of the global masking threshold is carried out (step 7) after the calculation of individual masking thresholds (step 6). Tewfik does not disclose that the global masking threshold is determined based on the calculated individual masking thresholds. It is altogether silent regarding how the global masking threshold is calculated.

In addition, Tewfik is specifically tailored for embedding watermarks in audio data (see Tewfik: Abstract, col. 2, lines 38-45, col. 4, lines 61-62, and col. 5, lines 29-34, e.g., The perceptual mask is specific to the host data being audio data). On the other hand, claim 1 relates to a moving image watermarking method. Therefore, it appears that there would be no reason for a skilled artisan to look at Tewfik to make up for the deficient teachings of Hannigan, since a

masking scheme and a watermark embedding method that is explicitly specific to audio data cannot be applied to moving image data. Even the Examiner's reasoning to combine the two references is based on providing "hiding of data, including watermarks, in human-perceptible sounds" (Office Action, page 6, emphasis added). As such, Applicants submit that the Examiner's reasoning to combine the references is inadequate.

Furthermore, Applicants submit that Hannigan does not disclose or suggest obtaining a watermarked frame value by adding the watermark value weighted by the global masking value and a control variable. The Examiner attempts to transform a global gain 810 in Hannigan to the claimed global masking value. However, as shown in FIG. 8 of Hannigan, the global gain 810 is an independent entity that is not based on any previously performed operations, let alone separately performed masking operations as required by claim 1.

In view of the above, Applicants submit that Hannigan and Tewfik, alone or in combination, do not disclose all the features of claim 1. Accordingly, Applicants request the Examiner to withdraw the 35 U.S.C. § 103(a) rejection of claim 1.

Since claims 6-8 depend from claim 1, Applicants submit that they are patentable *at least* by virtue of their dependency. However, Applicants submit that claim 6 is patentable for reasons other than its dependency.

For example, claim 6 recites decreasing a control variable by a predetermined value if the image quality of the frame is less than the target image quality, and increasing the control variable by a predetermined value if the image quality of the frame is greater than the target image quality. The Examiner contends that col. 12, lines 30-50 of Tewfik disclose this feature. Applicants respectfully submit that the Examiner is misapplying the teachings of Tewfik.

In this portion, Tewfik merely discloses that the data to be embedded is adjusted according to particular masking thresholds (Tewfik, claims 19 and 20). As an initial matter, Applicants point out that in claim 6, the value of a control variable is increased or decreased, not the watermark itself. Here, in Tewfik, the actual data to be embedded is being adjusted.

Moreover, even if the data to be embedded is construed as the control variable, there is no explanation in Tewfik as to how the data to be embedded is adjusted. On the other hand, claim 6 recites a specific and unique method of decreasing a control variable by a predetermined value if the image quality of the frame is less than the target image quality, and increasing the control variable if the image quality of the frame is greater than the target image quality. No such detailed description of adjusting the data to be embedded is disclosed in Tewfik.

Therefore, Applicants respectfully submit that claim 6 is patentable over the combination of Hannigan and Tewfik.

Claim 11 relates to a recording medium for storing computer programs for executing the method of claim 1 in a format readable by computers. Therefore, claim 11 is patentable for reasons similar to those given above with respect to claim 1.

Claims 9-10 and 12-13

Claims 9-10 and 12-13 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,954,549 to Kraft in view of Hannigan¹. For *at least* the following reasons, Applicants respectfully traverse the rejection.

¹ Applicants note that although the statement of rejection indicates that claims 9-13 are rejected, claim 11 is only rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hannigan and Tewfik. Claim 11 is not addressed in the rejection based on Kraft and Hannigan.

For example, claim 9 recites a spatial masking method for use in watermarking a moving picture, comprising extracting edges from the contrast-adjusted frame. The Examiner contends that col. 2, lines 6-15 of Kraft disclose this feature. Applicants respectfully submit that the Examiner is misinterpreting the teachings of Kraft.

The cited portion in Kraft only discloses that a global contrast is preferably determined based on an image which was subjected to an image detail removal process. Kraft further discloses that the global contrast is determined based on an image with a reduced resolution. It is not understood how the Examiner believes this portion discloses the above-noted feature of claim 9. That is, no disclosure of extracting any information from the subject image is found in Kraft, let alone extracting edges from a contrast-adjusted image.

As such, Applicants submit that claim 9 is patentable over Kraft, Hannigan, or any conceivable combination thereof.

Claim 10 recites a motion masking method for use in watermarking a moving picture, comprising, *inter alia*, obtaining a luminance difference between a current frame and a previous frame, and extracting edges from the current frame. The Examiner again contends that col. 2, lines 6-15 of Kraft disclose this feature. Applicants respectfully disagree.

As discussed above with respect to claim 9, the cited portion of Kraft does not disclose any extraction of information from a subject image. Moreover, Kraft states that “[t]he global contrast...corresponds especially to differences (and/or the ratio) between the maximum and minimum brightness in the (whole) image” (Kraft, col. 2, lined 6-9, emphasis added). That is, the global contrast is based on values within the same image. On the other hand, claim 10 recites obtaining a luminance difference between a current frame and a previous frame, i.e., two different frames.

Also, the Examiner acknowledges that Kraft does not disclose motion masking, but cites col. 11, lines 20-65 of Hannigan to disclose this feature. Applicants respectfully submit that neither Kraft nor Hannigan disclose this feature.

This portion of Hannigan only describes operations in a frequency domain (*see* Hannigan: col. 11, lines 25-28). Moreover, Hannigan explicitly states that its perceptual analysis employs a HVS model to identify signal frequency bands and/or spatial areas to increase or decrease watermark signal intensity to make the watermark imperceptible to an ordinary observer (Hannigan, col. 10, lines 46-54). Nowhere does Hannigan disclose or suggest any motion masking operations.

In view of the above, Applicants submit that the combination of Kraft and Hannigan does not disclose the above-noted features of claim 10. Accordingly, Applicants respectfully request the Examiner to withdraw the 35 U.S.C. § 103(a) rejection.

Since claims 12-13 are canceled without prejudice or disclaimer, Applicants submit that the rejections thereto are rendered moot.

New claims

New claims 14-15 are patentable *at least* by virtue of their dependency. Moreover, the prior art of record does not disclose or suggest that the step b) comprises the steps of performing a motion masking operation as set forth in claim 14. The prior art of record also does not disclose or suggest that in step b), the plurality of the masking operations are separately performed on identical moving image data as recited in claim 15.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

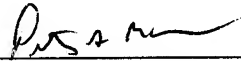
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